All projects that use federal money require environmental clearance. Environmental documents are used to help obtain this clearance. Environmental concerns are addressed through one of three main documents: Environmental Impact Statement, Categorical Exclusion or an Environmental Assessment. The type of document used for a project is dependent on the project complexity and expected social, economic, and environmental impacts.

Federal aid highway projects are required to comply with the National Environmental Policy Act of 1969 (NEPA). NEPA identifies three classes of actions, (Class I - Environmental Impact Statement (EIS), Class II - Categorical Exclusion (CE), and Class III - Environmental Assessment (EA)), which in turn require varying levels of documentation in the NEPA process. A brief review of each class follows. More discussion is found in the Code of Federal Regulation, 23 CFR 771. A summary of how to prepare these documents is found in FHWA Technical Advisory T 6640.8A. For all federal aid projects, the PCR author should coordinate the need for Environmental Documentation with the Engineering and Environmental Section in the Design Division. The three classes are as follows:

Class I Actions - These are actions that may significantly affect the environment and will require an Environmental Impact Statement (EIS).

Examples of these actions include:

1. Any new controlled access freeway.

2. Any highway project of four or more lanes on a new location.

3. Major transportation related development whose construction involves a large amount of demolition, displacement of a large number of individuals or businesses, substantial disruption to local traffic patterns, or new construction or extension of a separate roadway for buses or high occupancy vehicles not located within an existing highway facility. This classification will take into account the condition of the buildings and availability of comparable replacement facilities for displaced residences or businesses.

Class II Actions - These are actions that do not induce significant impacts to planned growth or land use for the area; do not require the relocation of significant numbers of people; do not have a significant impact on any natural, cultural, recreational, historic or other resource; do not involve significant air, noise, or water quality impacts; do not have significant impacts on travel patterns; or do not otherwise, either individually or cumulatively, have any significant environmental impacts. These actions are referred to as Categorical Exclusions (CATEX). Categorical Exclusions are the most common type of environmental clearances used by the NDDOT.

Projects that are processed as Categorical Exclusions are listed in the Code of Federal Regulations, Title 23, Part 771, Section 117. This list is divided into two groups. The first

groups (paragraph c) are those actions which normally do not require any further National Environmental Policy Act approvals by the Federal Highway Administration (FHWA). The second groups (paragraph d) are those actions that can be designated as Categorical Exclusions only after submitting documentation to FHWA that the specific project meets the conditions or criteria for a Categorical Exclusion. Normally, this documentation will consist of the Project Concept Report (PCR).

Class III Actions - These are actions in which the significance of the impact on the environment is not clearly established. All actions that are not Class I or Class II are Class III and require the preparation of an Environmental Assessment (EA).

The PCR is often the basis for determining the category assignment for a project. The degree of need for environmental documentation is usually not fully understood until the project study is well underway. In this way a PCR can often lead into an EA or EIS.

Multiple projects are often discussed in one concept report and approved together. The environmental document writer should note all related projects. Writers need to be conscious of the full scope of these projects when determining if the multiple projects can be documented together. If it is determined that multiple projects can be documented together, all relevant project numbers should be included with all the documentation (PCR, Categorical Exclusions, etc).

Examples:

- Grading and surfacing of a project may be done in two different years with two different project numbers.
- Divided highways or interstates with separate project numbers for each roadway.
- Tied projects.

II-05.01 Class I Actions - Environmental Impact Statements (EIS)

II-05.01.01 Notice of Intent (NOI)

For those federal actions that are categorized as Class I projects, a Draft Environmental Impact Statement (DEIS) will be prepared.

As soon as practical, after it has been determined to prepare a DEIS, the Department should submit to FHWA the information necessary to publish a Notice of Intent in the Federal Register. The NOI initiates the EIS process and summarizes the proposed project and scoping process. The format and content of the NOIs are specific and must be strictly adhered to as provided in the FHWA Technical Advisory Guidance Material. The designer or PCR author in conjunction

with the Engineering and Environmental Section will prepare a NOI in accordance with FHWA Technical Advisory Guidance Material. A press release, prepared at the same time, will be sent to the District Engineer to make available to the local news media.

II-05.01.02 Draft Environmental Impact Statement (DEIS)

The DEIS contains a discussion of:

- Alternatives
- Study findings, reviews, consultation, and coordination
- Possible impacts which may have a significant effect on the quality of the human environment.

The DEIS will include input from:

- Cooperating agencies
- The MPO in urbanized area
- NDDOT District Engineers and Central Office Divisions
- FHWA
- Local officials
- County engineers or consultants for county secondary and off-system projects
- Other agencies, groups or individuals

Where adverse impacts are found, methods should be proposed which will avoid or minimize the impact on the area through which the improvement is proposed. The designer or PCR author in conjunction with the Engineering and Environmental Section will revise the PCR to a DEIS format which should be prepared in accordance with FHWA Technical Advisory Guidance Material.

When the DEIS has been completed, FHWA sends it in for a Legal Sufficiency Finding.

When the DEIS has been reviewed and adopted by FHWA, a news release should be issued to notify the public that it is available for public inspection. The news release concerning a public hearing or opportunity will be utilized to inform the public of the availability of the DEIS. FHWA will ensure that the required Federal Register public availability notice is printed which establishes a 45-day review period.

The DEIS is mailed to concerned local, state, or federal agencies as well as local interest groups or individuals who have expressed an interest in the project with a response requested in 45 days or less. The distribution list is on the web at www.state.nd.us/dot/designmanual.html under Design Distribution List.

II-05.01.03 Final Environmental Impact Statement (FEIS)

Comments received after circulation of the DEIS and from public hearings, when held, are considered in the preparation of a Final Environmental Impact Statement (FEIS) for adoption by FHWA.

The FEIS should identify the preferred alternative and basis of decisions, discuss substantive comments received on the DEIS and all reasonable alternatives considered, summarize citizen involvement, discuss selection of mitigation and enhancement measures, environmental findings, results of coordination, final Section 4(f) and 6(f) findings, and include, when appropriate, a description of the procedures to be followed to assure that all environmental mitigation measures are implemented.

If any additional studies are done or if any information is developed which would affect the project after circulation of the DEIS, such study, or information should be made a part of the FEIS.

The FEIS is circulated for comment within the department to the divisions affected by the improvement and to the divisions with expertise in a particular field which is of importance to the improvements.

FHWA will send the FEIS in for a Legal Sufficiency Finding.

When the FEIS is distributed (see list on the web at www.state.nd.us/dot/designmanual.html under Design Distribution List) and filed with EPA, the FEIS is made available to the public through:

- Publication of a notice of availability in local newspapers.
- Furnishing the document to any person(s), organizations, or agencies that made substantive comments on the DEIS or requested a copy.
- A copy at the State Library and any local libraries within the vicinity of the proposed project.

II-05.01.04 Record of Decision (ROD)

After the FEIS has been approved, the designer or PCR author in conjunction with the Engineering and Environmental Section will prepare a draft ROD in accordance to FHWA Technical Advisory Guidance Material and will submit it to FHWA for comment and finalization. The ROD will state what the decision is, alternatives considered, and practical means to minimize harm. The ROD may not be signed sooner than 30 days after publication of the FEIS notice in the Federal Register or 90 days after publication of the DEIS notice, whichever is later.

Signing of the ROD will constitute FHWA concurrence in the project concepts as described in the FEIS.

The ROD is distributed to those on the distribution list found on the web at www.state.nd.us/dot/designmanual.html under Design Distribution List.

After the ROD is signed, the District Engineer (state and urban projects) or County Engineer (county secondary or off-system projects) will be notified of this action and may elect to provide the news media with an informational news release.

Environmental and other commitments contained in the ROD must be implemented. District Engineers and Design and Bridge Divisions will be sent a copy of the ROD. Design and Bridge Divisions will be responsible for implementing commitments relating to preparation of construction plans. The District Engineer is responsible for implementing construction and post construction environmental commitments. The county will be responsible for implementing ROD commitments on county secondary or off-system projects.

The Design Division should assure, before requesting PS&E approval from FHWA that the final plans have not significantly changed from the original proposed action. Any substantial changes in the proposed action should be reviewed for any changes in environmental impacts.

The ROD normally consists of a cover sheet, summary of selected alternatives and basis of decision, summary of alternatives considered and basis of decision, summary of Section 4(f) and 6(f) basis of decision, summary of measures to minimize harm and environmental commitments, summary of monitoring and enforcement program, summary of agency and public comments received on EA and department responses, and a signature block.

II-05.02 Class II Actions - Categorical Exclusions (CE)

Class II actions are Categorical Exclusions. State projects processed as Class II actions are processed by submitting a Project Concept Report to FHWA, asking concurrence in the project concepts, and determination to class the project as a categorical exclusion. County paving projects processed as Class II actions are normally processed in a group submission. This submission has a categorical exclusion determination based on preliminary and historic project information.

II-05.03 Class III Actions - Environmental Assessment (EA)

An EA should be prepared for each project processed as a Class III action. For state projects, the designer or PCR author in conjunction with the Engineering and Environmental Section will revise the PCR to an EA format in accordance with FHWA Technical Advisory Guidance

Material and present it to FHWA Division Administrator for review and adoption. The County Engineer prepares the EA for county secondary and off-system projects. Field inspections may be conducted in the same manner as described for Class I actions. The EA should include most of the same information provided by a DEIS.

The EA normally consists of a cover sheet, table of contents, purpose and need for action, alternatives, impacts, comments and coordination, appendices, and Section 4(f) and 6(f) evaluations.

When the EA has been reviewed and adopted by FHWA, a news release will be utilized to notify the public of its availability. A 30-day review period should be established. The news release, concerning a public hearing or opportunity, should be utilized to inform the public of the availability of the EA.

Copies of the EA should be mailed to cooperating agencies for their review and comment. The distribution list can be found on the web at www.state.nd.us/dot/designmanual.html under Design Distribution List.

II-05.03.01 Finding of No Significant Impact (FONSI)

After reviewing any comments received (written or from the public hearing, if conducted), the EA should be revised as necessary. The final EA should then be submitted to FHWA Division Administrator for evaluation, of determination, of no significant impact. Adoption of the EA will constitute FHWA's concurrence in the project concepts.

The FONSI normally consists of a cover sheet, summary of agency and public comments received on the EA and department responses, and request that a Finding of No Significant Impact be made.

The District Engineer (state and urban projects) or County Engineer (county secondary or off-system projects) should be notified of this action and may elect to provide the news media with an informational news release.

The FONSI is distributed to those on the distribution list found on the web at www.state.nd.us/dot/designmanual.html under Design Distribution List.

II-05.04 Project Concept Report

This section outlines the process for developing a project concept report (PCR), which is used as a tool for environmental classification and determining eligibility for federal funding. Depending on which system the project is on, the roles of the city, county, state, and federal government vary. The federal role is limited, except where the project is on the national

highway system, and is in excess of $3 million. In this case the federal government has full involvement.

The project concept report:

- Compares existing conditions and proposed modifications against accepted design standards.
- Presents the initial design alternates.
- Presents cost estimates for feasible alternates and justification for rejection of alternates which are not feasible or desirable.
- Evaluates social, economic, and environmental impacts.
- May be used to obtain higher-authority decisions on the project concept and alternates, depending on the complexity of the project.
- Is used to determine a project's eligibility for federal funding.
- Is used to obtain environmental classification from FHWA.

The project concept report may consist of a one-page description of the proposed improvement for very simple projects to a very detailed report including a discussion of alternates and impacts for more complex projects.

The typical PCR entails five main parts; executive summary, purpose and need, alternates, impacts, and comments and coordination. Each of these parts has many sections.

The contents of a PCR should be addressed in the same order that issues are addressed in this manual. However these are only guidelines. Some issues addressed in this manual are not applicable to all projects. When an issue does not pertain to a particular project, that part of the documentation may be omitted.

A PCR checklist for maintenance, preventive maintenance and other small projects is found in Appendix II-05 C. A PCR checklist for large complex new construction and reconstruction projects is found in Appendix II-05 D. A PCR checklist for medium size, semi-complex, reconstruction, resurfacing, rehabilitation, and restoration projects is found in Appendix II-05 E.

The distribution list for the draft and final PCRs is on the web at www.state.nd.us/dot/designmanual.html under Design Distribution List.

Projects with ITS

The following process has been developed and should be followed to ensure Intelligent Transportation Systems (ITS) applications are communicated early in the development stages, and implemented efficiently and effectively.

Step 1 - Review ITS statewide plan (performed by Maintenance & Engineering Services).
Step 2 - Each project scoping report should include a decision item to determine if there should be a study done. _____ YES _____ NO
(If yes, continue to step 3; if no, STOP).
Step3 - Maintenance and Engineering Services should attend the field review and conduct a check list of ITS possible components (2 weeks to perform this step).
Step 4 - ITS Committee will make recommendations (2 weeks to perform this step).
Step 5 - Maintenance and Engineering Services submits proposal and components with costs for inclusion into Project Concept Report (PCR) to the PCR author (1 week to perform this step).
Step 6 - ITS options with costs and impacts will be incorporated into PCR.
Step 7 - PCR sent out for comments.
Step 8 - PCR sent to management for decisions.
Step 9 - PCR decisions should be incorporated into design.

ITS components should typically be considered for the following:

- Interstate surfacing or reconstruction projects
- Urban region system reconstruction projects
- Urban regional signal projects
- Inter-regional surfacing or reconstruction projects
- Major bridge replacement or repair

All ITS items will be included in the PCR as a decision item.

Completed PCRs and Plans

The Administrative Assistant in the Office of Project Development has the responsibility for managing the distribution of Project Concept Reports, obtaining signatures from the Deputy Director for Engineering, and where appropriate from FHWA. The proper format and flow of documents is important in this process. Concept report authors are to submit final PCRs for signature as follows: (see Section II-07)

1. Central Office PCR authors submit their reports to the Administrative Assistant in the Office of Project Development (OPD).

2. Districts are to submit their original PCRs to Consultant Agreement Section (CAS).

3. Consultants working on rural projects are to submit their PCRs to CAS.

4. After review by CAS, the District and Consultant PCRs will go to the Administrative Assistant in OPD for appropriate document flow.

5. Consultants or Designers working on urban regional projects are to submit their PCRs to the Local Government Division.

The PCR should be assembled and signed as follows:

1. A standard cover detailing the PCR is to be on white paper. The goldenrod copy (approved copy) will be created in OPD. Sample PCR covers are available on the web at www.state.nd.us/dot/designmanual.html under Design Manual Reference and Forms in the "NDDOT Environmental Document Covers" table.

2. The second page of all PCRs will be the Certification Page, see Appendix II-05 I.

3. All following pages are to be white unless color pictures or colored text is required. All other color pages will be created in OPD.

4. The pages that comprise the body of the PCR require a footer describing the file name, project common name, page number and project number.

5. PCRs are to be clean, collated, paper or spring clipped and ready for reproduction. Please do not bind or staple these Concept Reports.

6. Two individual PCRs are required. The first is to include all originals and the second may be a copy of the original.

7. PCR's will be approved and signed according to the approval table below.

8. Design Exceptions:
   - These should be written per the format in Section I-06.06, Appendix I-06 C and Appendix I-06 E.
   - The Director of the OPD will recommend the exception approval to the DDE.
   - The Signatures should be as shown on the example in Appendix I-06 E.
   - Design exceptions will be submitted to FHWA for approval on projects with full involvement. Design exceptions that require FHWA will be attached to the PCR but not included within the PCR.

8. Environmental Documentation:
   - The Administrative Assistant for the OPD will forward the appropriate environmental document to FHWA for approval.

The Plan Signature should be as follows:

1. All plans are to be signed by the designer and stamped by the Person in Responsible Charge for the design. All plan sheets are to be signed by the designer, if the designer chooses to, otherwise by the Person in Responsible Charge for the design. Other required signatures are per the table below.

2. Templates for Maintenance and Minor Maintenance Plan Title Sheets (8.5" X 11") may be found on the web at www.state.nd.us/dot/designmanual.html under Design Manual Reference and Forms in the Preventative Maintenance table.

3. Plans that require the 11" X 17" sheets should be developed according to the NDDOT CADD standards. The Standard MicroStation Title Sheet Cells should be used.

PCRs and Plans should be approved by the NDDOT representatives shown in the table below.

Project Type	Federal Aid	Formal Draft Circulation and Comment	Approval Signatures		
			PCR	Design[5] Exception	Plans
Maintenance (District Funds):[4] Stock Piles, Pavement Markings, Seal Coats, Asphalt Patching and other District Fund Administrated Projects	No	No	District	OPD[2]/ DDE[3]	District Engineer
Maintenance (SAP &H): [4] Stock Piles, Pavement Markings, Seal Coats, Asphalt Patching and other District Fund Administrated Projects	No	No	District	OPD[2]/ DDE[3]	District Engineer
Preventative Maintenance: [4] Seal Coats[6] , Microsurfacing, Thin Lift Overlays, Concrete Pavement Repair And Grinding	Yes	No	District	OPD[2]/ DDE[3]	District Engineer
Resurfacing, Restoration, Rehabilitation (3R)	Yes	Yes	DDE[3]	OPD[2]/ DDE[3]	Designer[1]/ OPD[2]
New or Reconstruction	Yes	Yes	DDE[3]	OPD[2]/ DDE[3]	Designer[1]/ OPD[2]
Other Construction Projects: State Aid Projects	No	Yes	DDE[3]	OPD[2]/ DDE[3]	Designer[1]/ OPD[2]

[1] Designer = signed by the Designer and stamped by the Person in Responsible Charge for the design (Design Engineer, Bridge Engineer, Design Program Manager, District Engineer, Consultant)
[2] OPD = Director of the Office of Project Development
[3] DDE = Deputy Director for Engineering
[4] Plans will be reviewed by OPD on a random Basis

[5] Design Exception with full involvement require FHWA signature
[6] No PCR is required for programmatic Seal Coat Projects

Preventive Maintenance

PCRs have been simplified by the development of a form that should be used. A sample form can be found on the web at www.state.nd.us/dot/designmanual.html under Design Manual Reference and Forms in the Preventive Maintenance table, and an example can be found in Appendix II-05F.

II-05.04.01 Executive Summary

An executive summary should be included in both the draft and final PCR. Comments received from the draft PCR circulation are incorporated into the summary. It is not intended that the summary be a duplicate of the PCR but, it should highlight the specific issues addressed in the PCR. It should provide, where applicable, cross references to the PCR. The summary provides a record of the project review and approval. The executive summary should contain the following:

- A description of the project location.
- The original scope of the work, versus the one covered in the PCR, when it was scheduled and estimated cost.
- A summary of the proposed improvements and alternatives, including, a summary of the pros and cons of each alternative and the estimated cost of each.
- The comments from the draft PCR circulation with appropriate responses, if required. Obviously the draft version of the executive summary circulated with the PCR doesn't include a comment section.

Note: PCR writers should document when a division engineer or representative has reviewed a PCR even if no comments were made. Example:

FHWA
No Comments

Note: Where possible, the comments should be in the form of a spread sheet.

- All Environmental Issues and Commitments should be included in the executive summary. Examples of environmental commitments include; archeological avoidance areas, Wetlands, 4(f), 6(f), tree replacement commitments, construction time frame commitments due to wildlife issues such as spawning activities, noxious weed commitments, etc.

- There should be a brief summary of Public Issues for which there is an impact. If there is no impact, they will generally be covered in the PCR. The following are examples of such issues:

    - Air Quality
    - Noise
    - Water quality
    - Wetlands and Cultural Resources
    - Flood Plain
    - Hazardous Waste
    - Construction Issues, i.e. work zone traffic control, project phasing, detours and alternate routes, adjacent construction projects, restrictions and incentives and disincentives.
    - Low income and minority living areas.
    - Considerations relating to pedestrians and bicyclists.
    - Relocation
    - Economic

- A section requesting executive decisions on whether the project should proceed, whether a public hearing should be held, and, if a public hearing is held, which alternates should be presented. If the decision is not to conduct a public hearing, then the executive summary should decide which alternate or alternates to select.

II-05.04.02 Technical Section

- **Purpose and Need**

    The purpose and need of a project is essential in establishing a basis for the development of the range of reasonable alternatives required in an environmental document and assists with the identification and eventual selection of a preferred alternative.

    The first part of the purpose and need should explain where the proposed project is located. The limits of a project should be clearly described. For a highway improvement project, normally street names, stations or reference points are used. An area map is included at the beginning of the report to show project location. Project limits should be based on logical termini. See FHWA "Guidance for Preparing and Processing Environmental and Section 4(f) Documents." Major roadways intersecting the proposed project should be noted.

Justification for the project must be explained. Highlight what problems the proposed project intends to correct. Examples; correct failing pavement, reduce traffic congestion, eliminate hazard, etc. This statement should be directed at the corrections needed and not at the solutions. Addressing the corrections needed in the purpose and need statement, versus the solutions, is fundamental to scoping. The scoping process is used to identify the range of alternatives, impacts and significant issues to be addressed in the PCR.

The following items may be listed and described in the purpose and need statement for a proposed action. These are by no means all-inclusive or applicable in every situation. They are intended as a guide.

- *Project Status* - Briefly describe the action's history, including measures taken to date, other agencies and governmental units involved, action spending, schedules, etc.
- *Capacity* - Discuss the capacity of the present facility and its ability to meet present and projected traffic demands. Discuss what capacity and levels of service for existing and proposed facilities are needed.
- *System Linkage* - Discuss if the proposed action is a "connecting link" and how it fits into the transportation system.
- *Transportation Demand* - Discuss the action's relationship to any statewide plan or adopted urban transportation plan. In addition, explain any related traffic forecasts that are substantially different from those estimates of the 23 U.S.C. 134 (Section 134) planning process.
- *Legislation* - Explain if there is a Federal, state, or local governmental mandate for the action.
- *Social Demands or Economic Development* - Describe how the action will foster new employment and benefit schools, land use plans, recreation facilities, etc. In addition, describe projected economic development/land use changes that indicate the need to improve or add to the highway capacity.
- *Modal Interrelationships* - Explain how the proposed action will interface with and serve to complement airports, rail and port facilities, mass transit services, etc.
- *Safety* - Explain if the proposed action is necessary to correct an existing or potential safety hazard. In addition, explain if the existing accident rate is excessively high and why, and how the proposed action will improve safety.

- *Roadway Deficiencies* - Explain if and how the proposed action is necessary to correct existing roadway deficiencies (e.g., substandard geometrics, load limits on structures, inadequate cross-section, high maintenance costs, etc.) In addition, explain how the proposed action will correct these deficiencies.

- **Project Construction History**. Discuss previous roadway construction within the proposed project limits. Explain when the existing roadway was constructed and repaired.

- **Function and Funding Classification.** Note roadway functional classification; interstate, arterial highway, arterial road, collector road, etc. Note roadway funding classification; interstate, primary regional system, secondary regional system, urban roads, secondary roads, etc.

- **Geometry.** Discuss the existing horizontal and vertical alignments. Note deficiencies and state whether the alignment satisfies minimum or desirable standards. Are sight distances adequate? What kind of superelevation is used in the curves?

- **Typical section.** Graphic typical section of the existing corridor showing all pavement layers, roadway width, various lane widths, right of way limits, and other pertinent features such as parking and sidewalks.

- **Pavement conditions.** Type and severity of the main pavement distress, ride scores, and rutting values are discussed as part of the major maintenance history.

- **Traffic Operations and Data.** Summarize traffic data and reference the traffic operations report.

  Discuss current and projected average annual daily traffic and equivalent single axle loads (ESALs). A table of current and future vehicle volume and ESALs should be provided in the PCR and on the title sheet of the design plans. The average annual daily traffic (AADT) figure used in the table should be for the highest-volume intersection along the project. Generally a twenty-year projection of traffic through the corridor is presented, but will depend on the design life for the project. See Section I-06.

  Discuss posted speed limits. Does the speed limit change within the proposed project? Discuss traffic control systems - which intersections are stop sign controlled and which intersections are controlled by signals.

Discuss pedestrian usage on the existing and future project. Discuss the crash history of the project and any contributing factors, as well as the potential for crashes. Note any areas of concern.

- **Safety Review.** If conducted for the proposed project, summarize safety improvements noted in the safety review.
- **Drainage.** Discuss existing drainage system and any drainage deficiencies.
- **Bridges.** An evaluation should be conducted of existing structures, including their condition and latest National Bridge Inventory (NBI) record, geometric capacity, load capacity, hydraulic capacity, scour analysis, and pedestrian access.
- **Right of Way.** Note right of way constraints.
- **Access Control.** Summarize number and type of accesses (driveways) to the proposed project.
- **Lighting.** The presence, ownership, and type of any lighting system should be noted.
- **Utilities.** All information about existing utilities, including but not limited to: sanitary sewer, water, electrical, petroleum and gas lines, cable TV, and telephone lines.
- **Parking.** Discuss existing parking areas within the proposed project.
- **Railroad Crossings.** Note type and condition of the crossing surface material in place (wood plank-uses shims, full depth timber-sits on ties, timber-asphalt combination, asphalt only, rubber, concrete). Note the number of tracks. Railroad Crossings should be reviewed at the field review.
- **Sidewalks and Multi-Use Trails.** Discuss existing facilities and movements of pedestrians, bicycles, etc.
- **Transit Facilities.** Discuss existing transit facilities such as bus stops.

II-05.04.03 Alternatives

The alternatives section of the PCR discusses the methods to satisfy the purpose and need of the project. This section should include a discussion of: alternate routes and improvement types, the feasibility and prudence of the proposed alternates, the estimated cost differences between the alternates, and the advantages and disadvantages of each of the alternates.

- Proposed improvement. The proposed improvement subsection of the PCR should parallel the existing condition subsection. However, the following items should only be addressed in this subsection if actually improved.

  - **Geometry.** Discuss improvements to the horizontal and vertical alignments, sight distances, superelevations, turning movements, etc. Note, maintaining the existing roadway and changing lane assignments often creates geometrical concern that should be documented.

  - **Typical section.** Include graphic typical section of the proposed corridor showing all pavement layers, roadway width, various lane widths, right of way limits, and other pertinent features such as parking and sidewalks. A summary and findings of the soils, subgrade and pavement analysis,(for NDDOT-developed projects, the Materials & Research Division provides this information), should be presented.

  - **Traffic Operations.** Summarize Traffic Operations Study recommendations. For NDDOT projects, the Planning and Program Division prepares the traffic operations study. Discuss intersection layout changes (added driving and/or turn lanes, changed intersection traffic control and/or signals, etc). Discuss speed limit changes.

  - **Drainage.** Discuss drainage improvements. Don't forget to note roadway crowns and drainage paths.

  - **Bridges.** Recommendations for widening, strengthening, scour protection, etc. to address deficiencies identified in the PCR or on National Bridge Inspection (NBI) records. For projects to be funded with federal Bridge Replacement funds, include selection, list eligibility, consideration of lower-rated structure in same jurisdiction, and rehabilitation vs. replacement. Structures replaced with federal Bridge Replacement funds must show cost comparison with rehabilitation, or demonstrate non-feasibility of rehabilitation.

  - **Right-of-way.** Discuss the need to acquire any permanent right-of-way or construction easements, participation in right of way costs, exceptions to right of way policy, and any encroachments.

  - **Access.** Discuss any recommendations concerning the feasibility and extent of access control or revised access, based on crash history, potential for crashes, functional class, and access demand. Note the proposed removal and or replacement of driveways within the existing right of way along the project limits, as well as any concerns from the public about driveway widths.

- **Lighting.** If a lighting study has been done, the recommendations should be incorporated here. For NDDOT-developed projects, the Planning and Program Division does the lighting study.

- **Utilities.** Note any utility work necessary in this project, including all underground work, such as storm sewer, water, electrical and gas lines, cable TV and telephone lines. If relocation is necessary coordinate with the Utilities Engineer in the Design Division.

- **Parking.** Discuss all parking issues, including the type of parking proposed, the number of parking spaces lost because of turn lanes, the width of any parking lanes, etc. Federal funding is available for parking replacement on a case-by-case basis. Federal regulations must be followed when federal funds are used for parking replacement. The Americans with Disabilities Act should be followed in providing parking.

- **Railroad Crossings.** Discuss proposed railroad crossing improvements which should include the type of material used for the crossing, the type of warning devices and whether signal gates should be installed, and the funding participation. NDDOT, Cities, and Counties should coordinate railroad crossings with the respective railroad.

- **Sidewalks and Multi-Use Trails.** Discuss proposed improvements for pedestrians, bicycles, etc. Reference provisions to the American with Disabilities Act when applicable.

- **Landscaping.** Note landscaping improvements such as trees and bushes.

- **Transit Facilities.** Discuss proposed accommodations for transit facilities such as bus stops.

- Cost estimates. A detailed preliminary estimate of the cost of the proposed improvements should be included in the PCR. Usually the detailed estimates are included in an appendix and a summary is given within the body of the report. The estimate should include a summary of the local, state, and federal participating amounts. Pay items should match the NDDOT specifications and code listing (Historical Fact Sheet), obtainable from NDDOT. It's important to state clearly what the funding percentages are. When there is more than one funding ratio on the project, show where the project splits.

    - **Life-cycle costs.** A life-cycle cost analysis should be conducted on all projects over $25,000,000. It is optional for all projects less than $25,000,000.

The analysis is used to evaluate the economics of pavement design alternates. All costs involved during a pavement's complete life-cycle, including construction, maintenance, and rehabilitation, etc., are to be analyzed. NDDOT uses two major references in its economic analysis:

< "Life-Cycle Cost Analysis of Pavements," National Cooperative Highway Research Program (NCHRP) publication number 122

< "Economic Evaluation of Alternative Pavement Design Strategies,"AASHTO, 1986, chapter 3

The annualized method converts all present and future costs into one uniform annual cost. This method is widely used by transportation departments and recommended by NDDOT because it reduces each alternate to a common base of a uniform annual cost.

The analysis period is the time period used for comparing design alternates. NDDOT normally uses a design analysis period consistent with the design periods shown in Section I-06 for the respective roadway classification.

NDDOT has been using 4% as the discount rate for urban projects.

- **Cost Effectiveness Guidelines**

The project concept reports for preventive maintenance strategies should include a section addressing cost effectiveness similar to the following:

Estimated Service Life of Proposed Improvement: _____ yrs
Estimated Cost/Mile $ _____

o The estimated design life and estimated cost per mile are within the range determined by the NDDOT to be cost effective for the proposed improvements.

o A Cost Effectiveness Analysis attached.

For work activities not identified in the Preventive Maintenance Cost Effectiveness Guidelines, the cost effectiveness shall be determined by comparing the Life Cycle Costs (Net Present Worth) for the proposed work versus reconstruction or other appropriate work.

Preventive maintenance is a planned strategy of cost effective treatments to an existing roadway system and its appurtenances that preserves the system, retards

future deterioration, and maintains or improves the functional condition of the system without substantially increasing structural capacity. Preventive maintenance should be performed on structurally sound highways. The intent is to get 5-10 years extended service life with the preventive maintenance strategy.

Preventive maintenance project approvals are advanced with the understanding that geometric and safety enhancements generally will not be performed on the current project, but will be an integral part of a future 3R or reconstruction project. Preventive maintenance or minor work items shall not degrade existing safety or geometric aspects of a facility.

A preventive maintenance activity is eligible for Federal Aid if the state demonstrates that the activity is a cost effective means of extending the service life of a Federal Aid highway per the NHS Designation Act of 1995.

The cost effectiveness provided is based on comparing preventive maintenance costs to savings shown through delay of major rehabilitation/overlay or reconstruction costs using the life cycle cost analysis. The life cycle cost analysis does not consider pavement condition. Therefore, this methodology assumes that all the pavement options being compared provide the same level of service and that the preferred option is the one that minimizes life cycle costs.

Another cost effectiveness methodology considers benefits received by users and the cost to provide those benefits or benefit-cost analysis. Benefits to users of a well maintained pavement include reduced crashes, reduced travel times, reduced vehicle operating and maintenance costs, reduced disruptions to adjacent businesses, increased motorist comfort, and reduced or deferred capital expenditures through the preservation of a capital asset. As the benefits to the user are difficult to quantify in monetary terms, this method was not considered. Project development for preventive maintenance activities should include a review of actual highway conditions and pavement management data provided by the Planning and Programming Division. Guidance for the selection of appropriate preventive maintenance treatments is provided with the following publication:

> "Selecting a Preventive Maintenance Treatment for Flexible Pavements," Publication No. FHWA- IF-00-027, August 2000.

The following identifies several preventive maintenance strategies and corresponding cost effectiveness analysis (costs per mile for the various strategies are the result of averaging actual representative project costs on a per mile basis and includes all projects and engineering costs).

Flexible Pavements: Asphalt/Hot Bituminous Pavement (HBP) or Composite: Asphalt Over Continuously Reinforced Concrete (AOCRC) or Asphalt Over Plain Jointed Concrete (AOPJC)

Seal Coats - Seal coats that are added within 3-4 years of the hot bituminous pavement are approved as part of phased construction and do not require a cost effective analysis. The seal coat is placed to prolong the life of the pavement, to correct surface raveling and oxidation, to seal minor cracks preventing the intrusion of water, and to improve friction values.

Tables II-05.04.03 A and II-05.04.03 B in Appendix G illustrate the cost effectiveness for seal coats on Non-Interstate and Interstate highways. The seal coats are projected to extend the service life by 2-3 years for each seal coat application. The estimated cost per mile should be about $16,000/mi for non-interstate highways and $21,000/mi for interstate highways (two lanes).

Micro Surfacing - This procedure is used to improve ride qualities, fill ruts (reestablish cross section), seal (severe raveling and stripping), and to improve friction values. It could also be used in place of a seal coat if conditions warranted, although it is more costly.

Table II-05.04.03 C in Appendix G illustrates the cost effectiveness for micro surfacing. The micro surfacing is projected to extend the service life by 7-10 years. The estimated cost per mile should be about $56,000/mi for two-lane highways.

Thin Lift Overlay - This procedure is used to retard deterioration, to improve the ride quality, correct surface variations, and to improve surface drainage and frictional characteristics of the highway.

To qualify as preventive maintenance, the thin lift overlay is limited to one overlay per pavement life, not to exceed $1^{1}/_{2}$", plus 50 ton per lane mile for repairs, leveling, patching, etc, as provided by department preventive maintenance guidelines. The thickness and tonnage limitation as well as the limitation of one application of the strategy per life of the roadway section have been agreed upon as the maximum to be considered preventive maintenance to distinguish this work from structural overlays which are 3R and therefore subject to consideration of safety improvements.

Table II-05.04.03 D in Appendix G illustrates the cost effectiveness for thin lift overlays. The thin lift overlay is projected to extend the service life by 7-10 years. The estimated cost per mile should be about $60,000/mi for two-lane highways.

Milling - This procedure is used to restore the pavement cross section which has severe rutting and/or to remove unsatisfactory material. The surface texture after the milling should be fine enough that it can be used as the riding surface or suitable for a seal coat.

This procedure should only be used if it is determined that there is sufficient pavement section left to carry the traffic load.

The estimated cost per mile should be about $18,000/mi for two-lane highways. A separate cost effectiveness was not completed for this activity, as milling would generally be performed in conjunction with other activities such as seal coats or overlays.

Rigid Pavements: Portland Cement Concrete (PCC) - Jointed or Continuously Reinforced

Minor Concrete Pavement Repair (CPR) - This procedure is used to repair spalling, blow-ups, broken panels, punchouts, finger joint repair or replacement or removal, joint resealing, crack sealing, underdrain repair or cleaning, and pavement grinding. This is done to reduce the effects of these deficiencies, improve the ride, and extend the roadways service life before major rehabilitation or reconstruction is required.

Tables II-05.04.03 E and II-05.04.03 F in Appendix G illustrate the cost effectiveness for minor CPR. The minor CPR is primarily provided to improve ride quality which delays major rehabilitation or reconstruction; thereby extending the service life by 5-10 years. The minor CPR may also be completed in advance of a HBP overlay project. The estimated cost per mile should be about $20,000/mile. Two minor CPR applications may be applied in the life of a roadway section before considering the work a 3R strategy subject to consideration of safety improvements.

Grinding - Grinding is considered an acceptable minor CPR strategy. This procedure is used on concrete pavement to correct faulting at the transverse joints to improve the quality of the ride and reduce the impact loading. It also improves the friction characteristics of the roadway.

The cost effectiveness for grinding is on Table II-05.04.03 G in Appendix G.

Note: Projects for which the estimated costs exceed $75,000 per mile will be categorized as major CPR projects and will need to be processed as 3R Type projects to address safety enhancements and geometric aspects of the highway.

Cost Effectiveness Analysis (Life Cycle Cost)

The life cycle costs refer to all the costs that are anticipated for the life of the facility or pavements. This includes identifying and evaluating the economic consequences of various alternatives either over time or over the life cycle of the pavement.

In the tables in Appendix G, various Preventive Maintenance (PM) methods for both HBP and PCC pavements are compared to surfacing, reconstruction, or other PM alternatives. The life cycle costs are based on the construction costs and the salvage value. The salvage value is the prorated cost of the remaining design life of the in-place pavement based on delay for major rehabilitation/overlay or reconstruction. The costs are converted into today's dollar value through a method called the Present Worth (PW) Method. This method involves the conversion of all present and future expenses to a base of today's costs. The PW value is given by the equation: $PW = F(1 + i)^{-n}$. Where: F represents the future sum of money at the end of "n" years from present; "n" represents the number of years, and "i" is the discount rate. A 4% discount rate was used for the computation of the present worth values. The construction costs are developed on the basis of project cost history provided by the Planning and Programming Division (Appendix II-05 H). The tables in Appendix G show whether performing PM on the existing pavement is cost effective for extending the pavement service life and delaying major rehabilitation/overlay or reconstruction, based on the design life of the PM method chosen.

To use the tables in Appendix G, it is necessary to determine what PM strategy would best extend the service life of the existing section. Then a judgment needs to be made as to the estimated service life that the PM strategy would have when applied to the given roadway section. After selecting the appropriate chart and finding the estimated service life, cost effectiveness is determined by where the estimated service life of the PM strategy (left column) falls in relation to the present worth of the alternative capital investment (right column). The estimated cost per mile for the PM strategy is to be less than the present worth of the alternative capital investment strategy (10% variance may be allowed due to the variability of estimating).

Example: The District has concluded that a segment of ND 3 is structurally sound; has a fair ride, minor rutting, and relatively good joints (no spalling and tight). It is intended to extend the service life by placing a thin lift overlay on the segment of highway, rather than a structural overlay. The District believes the thin lift overlay will last 7 years or more. Referring to Table II-05.04.03 D, the Life Cycle Cost for a PM thin lift overlay, with an estimated service life of 7 years, is $150,000 per mile, which is less than or equal to the estimated cost of

$150,000 per mile for a 3R Structural Overlay strategy. Additionally, the actual estimated cost of the PM thin lift overlay is $52,000 per mile, which is less than the estimated cost of $60,000 per mile for the PM Thin Lift Overlay strategy. Therefore, the PM thin lift overlay is shown to be cost effective. For a predicted service life of 7 years or greater, the table shows the cost to be cost effective for this strategy.

For PM activities that are not provided in the tables, a separate cost effectiveness analysis should be included in the discussion or attached to the project concept report. If the cost is not shown to be cost effective on the table then a project specific cost effective analysis should also be conducted. For these PM activities, contact the Design Division for guidance on the cost effective analysis.

It should be noted that Tables II-05.04.03 H, II-05.04.03 I, and II-05.04.03 J in Appendix G for Major CPR, HBP Resurfacing, and Major CPR & HBP Resurfacing are provided for comparative purposes only. These strategies are not considered to be preventive maintenance strategies.

References

1. Geoffroy, Donald N., *NCHRP Synthesis of Highway Practice 223: Cost-Effective Preventive Pavement Maintenance*, Transportation Research Board, National Research Council, Washington, DC (1996)

2. *Selecting a Preventive Maintenance Treatment for Flexible Pavements*, Publication No. FHWA-IF-00-027, Federal Highway Administration, Washington, DC (August 2000)

- Programming. General programming details should be included in this subsection.

  Note the number of independent contracts proposed to build the project. For example, the proposed PCR details the construction of part of a divided highway where one contract is used for the North bound lanes and another is used for the south bound lanes.

  Note the proposed bid opening and when the proposed construction is planned to begin and end. Also note TERO requirements if applicable (project located within or near an Indian Reservation).

- Maintenance. The PCR should discuss the entities responsible for roadway maintenance after the project is completed. The degree of detail included here is dependent on how significant maintenance is to the selection of alternatives.

II-05.04.04 Impacts

This section describes in detail any impacts the project may have. The level of involvement will be dictated by the degree of impact. The impacts that should be discussed are contained in various FHWA Technical Advisory Guidance Material (see FHWA Technical Advisory T 6640.8A). The following impacts should be considered:

Land Use
Prime and Unique Agricultural Lands
Social
Relocation
Economic
Considerations Relating to Pedestrians and Bicyclists
Air Quality
Noise
Water Quality
Permits (See Supporting Documentation in Section II-05.05.06)
Wetlands (See Supporting Documentation in Section II-05.05.01)
Water Body Modification, Wildlife and Invasive Plant Species Impacts
Flood Plain
Wild and Scenic Rivers
Threatened and Endangered Species
Cultural Resources
Hazardous Waste
Visual
Energy
Construction - The following items should be discussed:
Work Zone Traffic Control - Project Phasing

Detours and Alternate Routes
Adjacent Construction Projects
Restrictions
Incentives and Disincentives

The Relationship Between Local Short-term Uses of Man's Environment and the Maintenance and Enhancement of Long-term Productivity

Any Irreversible and Irretrievable Commitments of Resources Which Would be Involved in the Proposed Action

Low Income and Minority Living Areas

Section 4(f), 6(f) involvement - Note actual evaluation must be included in separate section or document. (See Supporting Documentation in Section II-05.05.02, Section II-05.05.03, and Section II-05.05.04)

II-05.04.05 Comments and Coordination

This section should include a discussion of solicitation of views and a summary of any meetings with the public or representatives of environmental agencies.

II-05.05 Supporting Documentation

II-05.05.01 Wetlands

All Environmental Documents should have a Wetland Impact Statement. If wetlands will not be impacted by the proposed project, the wetland impact statement should clearly state this fact. Example: "This project does not involve any earthwork. This project only entails improvements to the roadway surfacing. No wetlands will be impacted."

See Appendix II-05 A for wetland delineation procedures. Any proposed construction activity which will affect wetlands must be specifically addressed. Executive Order 11990 issued by the President and Section 4(f) of the DOT Act of 1966, are intended to avoid the long and short term adverse impacts associated with the modification or destruction of wetlands. This consideration also applies to grading projects being done without federal aid, but with future plans to pave with federal aid. To comply with these regulations, the report should quantify acreage of easement and/or non-easement wetlands being filled on the present right of way and filling within the additional right of way to be acquired for the proposed project. This acreage should be listed in the manner similar to the method shown below in Sample Wetland Table.

SAMPLE WETLAND TABLE

		R/W ACREAGE FILLED		
LOCATION			ON ADDITIONAL R/W	
MILE	STATION	FILLING ON EXISTING R/W	NON-EASE. R/W	EASE. R/W
3	197+50 to 204+50 Lt	0.06	0.08	--
3	197+50 to 204+50 Rt	--	0.12	--
9	457+00 to 474+00 Lt	0.19	0.06	0.09
9	466+00 to 469+00 Rt	0.03	0.06	--
TOTALS		**0.28**	**0.32**	**0.09**

DEFINITIONS:

Easement Wetlands: Property on which the U.S. Fish and Wildlife Service (USFWS) has secured wetland easements.

Wetlands: Areas that are saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, sloughs, potholes, wet meadows, river overflows, and natural ponds. Any steps taken to minimize impacts to the wetlands should be identified, as should efforts to mitigate the effects of filling or draining.

II-05.05.02 Section 4(F)

Section 4(f) refers to part of the 1966 U.S. Department of Transportation Act, which gave specific protection to certain classes of public properties. These lands include public parks, recreation areas, wildlife and waterfowl refuges, and most Historic Properties (cultural resources eligible for the National Register of Historic Places). The legislation directed that these types of lands not be used by or for a project, unless:

- There is no feasible and prudent alternative to use of land from the property; AND

- The action includes all possible planning to minimize harm to the property resulting from the proposed use.

Whenever a project involves such properties, a Section 4(f) document must be prepared for each location before the land use is approved.

The 4(f) document is the vehicle that demonstrates that the provisions of the law are met. A section 4(f) statement is coordinated with the designer or PCR author along with the Engineering and Environmental Section, with the engineer being responsible for providing the specific information, measurements, etc.

II-05.05.03 Programmatic 4(f)

Some 4(f) situations may be processed under what is called a "programmatic 4(f)" process. In these instances, the 4(f) clearance, for certain types of 4(f) involvement, has already been obtained and certain project mitigation measures agreed to. On projects where Section 4(f) is involved and this type of processing is approved to include the necessary mitigation, the processing time can be brief (3-4 weeks).

"Programmatic" Documents which have been processed to date include:

- Projects with involvement in wetlands under easement to the U.S. Fish and Wildlife Service in North Dakota.

- Projects with minor involvement in the Public Parks Recreation Lands and Wildlife Refuges.

- Projects with minor involvement with Historic Sites.

Projects processed via the "programmatic" route will have to comply with the provisions of the master document under which it is processed.

II-05.05.04 Section 6(f)

Section 6(f) refers to a portion of the 1965 Land and Water Conservation Fund Act (L&WCF). This act provides grants to communities to be used for acquiring or improving lands for recreation uses.

Transportation projects that acquire land that has received a Section 6(f) grant are considered to be converting the use of the land. When this occurs, the city or state (whichever developed the project) must acquire replacement lands. Section 6(f) applies to the entire parcel of land

identified in the application for L&WCF funds. Even if a very narrow, unused, unimproved strip is taken from one edge of a large park or recreation area, it will probably have to be replaced elsewhere.

Whenever a project involves such properties, a Section 6(f) document must be prepared for each location before the land use is approved. The 6(f) document shows that the provisions of the law are met. The designer or PCR author should coordinate the need and preparation of Section 6(f) documentation with the Engineering and Environmental Section.

Each state has a State Liaison Officer (SLO) who coordinates Section 6(f) projects. In North Dakota, the SLO is the Director of the State Parks and Recreation Department. When the state, county, or a city solicits views from Parks and Recreation, they will be told whether there are any Section 6(f) lands in the project's vicinity. If there are, they must work with the SLO to replace the land they are taking.

The SLO will decide if temporary easements result in conversion of use. If they do not, no replacement is necessary.

II-05.05.05 Cultural Resources - Section 106

Introduction

The National Historic Preservation Act (NHPA) of 1966, as revised, requires Federal Agencies (FHWA) to consider the effects of their projects on Historic Properties. Historic Properties are typically sites, buildings, structures, or objects 50 years old or older, which are fairly unaltered, are representative of a type or the work of a master, have important information potential, or are associated with historically significant persons or events. Implementing regulations (36 CFR 800) define a process (typically referred to as the 106 process) for complying with the law. This process can be quite involved and, if historic properties are identified and effects cannot be avoided, the process can take 2 or more years to complete. The time needed to complete the Section 106 process varies dependent upon the complexity of the project, the type of historic properties located on the project, and the concerns of consulting parties and/or the public.

It is the National Historic Preservation Act implementing regulations that drive how the Cultural Resource Section of Design Division responds to cultural resource issues. Section 106 involves working with the State Historic Preservation Office, Native American tribes that might value cultural resources subject to effect, and other consulting parties. Federal Highway cannot fund an undertaking with potential to affect Historic Properties if Section 106 has not been completed.

The National Environmental Policy Act (NEPA) requires consideration of effects to cultural resources and is broader than NHPA. It is possible to have significant cultural resources under NEPA that are not Historic Properties under NHPA. However, we typically use the results of the Section 106 process to address cultural resources in terms of NEPA compliance.

The Cultural Resource Section considers the applicability of other laws and executive orders for cultural resources identified through the NHPA and NEPA.

The Cultural Resource Section will summarize the results of the Section 106 process for the Project Concept Report and will coordinate with the designer or PCR author on writing the solicitation of views letter to the State Historic Preservation Office (SHPO). In the future the solicitation of views letters to the Tribal Governments, THPOs, and Tribal Cultural Resource personnel will also be specific to their interests and needs. Please contact the Cultural Resource Section in regard to Project Concept Report and solicitation of views input.

Section 106 process documentation which you may want to have in your Project Concept Report as an appendix, include the Cultural Resource Section determination (e.g., No Historic Properties Affected) with SHPO/THPO concurrence, a No Adverse Effect (NAE) document which specifies how effects to Historic Properties will be avoided, or a Memorandum of Agreement (MOA) regarding resolution of adverse effects to Historic Properties. All of these documents conclude the Section 106 process, dependent upon resources encountered and effects of the project.

Types of NDDOT Projects with Cultural Resource Concerns

As stated previously, any project conducted by the NDDOT that involves Federal funds must take cultural resources into consideration to comply with the National Historic Preservation Act and the National Environmental Policy Act. There are various types of projects that are of primary concern. These include: 1) new roadways (e.g. city bypass projects, adding new lanes); 2) reconstruction; 3) resurfacing with safety aspects; 4) material source locations; 5) bridge replacement; 6) urban projects; and 7) transportation enhancement projects.

New Roadways: City bypass projects, 4-laning a 2-lane highway, new county road routes, for example, can involve not only disturbance of new land adjacent to an existing highway, but intrusion into an area which may have been relatively undisturbed or not serviced to the proposed level. This may require consideration of effects beyond those which are directly related to building a road. When looking at a bypass project, for example, we may need to consider the visual effects to historic buildings, archaeological sites, and landscapes in placing a highway in an area where one didn't previously exist, or consider the effects of commercial and residential development along the bypass which wouldn't take place but for the new roadway.

There will always be the need for a Class III cultural resource inventory (See Appendix II-05 B) with this type of project. These surveys are usually contracted out to cultural resource firms. It is important for the Cultural Resource Section to understand project parameters, as much as possible given the early stage of project development, so that they know how to identify the area of potential effect and types of effects they may need to consider before contracting for the survey.

Consultation with Native American Tribes which may value cultural resources in the project area is a necessary part of the Section 106 process. If concern is expressed for a particular project area, the tribe(s) is included in various aspects of the cultural resource decision-making process.

The product of the survey is a report explaining the cultural resource work completed. The report typically includes the following: 1) the results of the file and records search; 2) a description of survey methods and goals, 3) a description of any sites located as well as their legal location; 4) an evaluation of site eligibility (to the extent possible at the inventory stage), 5) recommendations regarding potential effects, 6) maps delineating the survey area, 7) site forms with information essential in determining significance; and 8) photographs for future reference. The most important aspect of the report to the DOT is the location of the cultural resource site(s) in comparison to the project and assessment of potential effects.

These reports are sent to the State Historic Preservation Office (SHPO) (or Tribal Historic Preservation Office (THPO), if the project is on a reservation which has an established office), with NDDOT's determination of the effects of the project. A copy of the report is also sent to interested Native American tribes and any other consulting party. The determination at this juncture is, No Historic Properties Affected or Historic Properties Affect. The SHPO/THPO returns NDDOT's cover letter which states what our determination is, with their concurrence, a request for additional information, or information on why they do not concur.

If there will be an adverse effect to a historic property then NDDOT needs to consider how NDDOT can avoid, minimize, or mitigate these effects. If NDDOT can avoid the effect by changing the project, NDDOT can document this action with a No Adverse Effect (NAE) document signed by the NDDOT, the SHPO/THPO, and the Federal Highway Administration (FHWA). Native American Tribes may be asked to be signatory to the document. A copy of the NAE with supporting documentation is then forwarded, by FHWA, to the Advisory Council in Washington, D.C.

If the NDDOT cannot avoid the effect, then NDDOT needs to work through consultation with the State Historic Preservation Office, concerned Native American tribes, and any other consulting parties, to resolve the adverse effect. Resolution of adverse effects is documented with a Memorandum of Agreement (MOA) which is signed by NDDOT, SHPO/THPO, and FHWA. Native American Tribes may be asked to be signatory to the document. FHWA needs to notify the Advisory Council when the NDDOT begins working to resolve adverse effects so they can participate and be a signatory if they wish. If the Council does not choose to be a participant, the MOA, with documentation, is simply sent to them after it has been signed.

Reconstruction: Reconstruction usually involves the realignment and widening of the existing roadway or the construction of a slightly new route. Most often the existing roadway over hills is flattened to increase sight distance and the angle of the slopes is decreased. With reconstruction comes the disturbance of many areas of virgin prairie or relatively undisturbed

farmland; with some portions considered as having high potential for the presence of archaeological cultural remains.

There will always be the need for a Class III cultural resource inventory (See Appendix II-05 B) with this type of project. As with new roadways, these surveys are usually contracted out. Our information needs, survey reporting, and Section 106 process documentation will be the same as discussed above for new roadways.

Resurfacing and Safety Features: By the very nature of the term, resurfacing does not affect much ground that has not already been disturbed by previous construction. However, safety work is frequently done in association with resurfacing and can require the modification of drive slopes, hills, drainage areas, and inslopes. Borrow for the modification is often taken from the backslope. Because the original construction of a highway may have bisected cultural resources, particularly prehistoric archaeological sites, there is a concern for protection of these sites, if they are important, from further disturbance. Consequently, all resurfacing projects which will have safety improvements associated with them, require Cultural Resource Section consideration.

In some cases, NDDOT contracts Class III cultural resource inventory (See Appendix II-05 B) of these projects to private cultural resource firms. In other cases the Cultural Resource Section chooses to complete a Class II cultural resource inventory (See Appendix II-05 B) in-house. A decision regarding the type of survey is typically related to availability of Cultural Resource Section employees and cultural resource site potential.

Reporting on contracted Class III inventories and completion of the Section 106 process is the same as described above. Reporting on in-house Class II inventories is more varied. There are times we have done a similar individual survey report for a Class II inventory and received concurrence from the State Historic Preservation Office with the appropriate effect determination. At other times we have used the solicitation of views letter to the State Historic Preservation Office to document the inventory, depending upon timing of these letters and the cultural resource work. At other times we have documented these inventories in a single year-end report to the State Historic Preservation Office, but only when the determination of effect is, No Historic Properties Affected.

Aggregate, Riprap and Borrow Pits: Considering cultural resources, the aggregate pit is of most concern as it is often situated on pleistocene terraces next to water. This type of location has been proven to have a high probability for the presence of prehistoric habitation sites. Borrow areas, on the other hand, can be located anywhere, but usually as close as possible to the project, and may or may not have high site potential. Aggregate and borrow pits can be state owned, state optioned, or privately owned. The contractor can use those pits designated in the plans and offered by the state, or they can obtain their own source of borrow or aggregate.

It is our policy to require Class III cultural resource inventory of all material source locations which haven't been included in a previous inventory effort. For state owned or optioned locations, the Cultural Resource Section typically completes the Class III cultural resource inventory and reports to the State Historic Preservation Office as described above. For contractor located borrow the contractor is responsible for hiring a cultural resource firm to complete the inventory and reporting process. *All areas of potential disturbance (e.g., the pit, the haul road, and any staging areas or spoil piles) need to be included in the inventory.*

Because of time constraints on contractor located borrow, inventory results are called in from the cultural resource firm to the Cultural Resource Section of Design and a map of the surveyed area is sent to Design. If no cultural resources were identified during the inventory the dirt contractor is notified by telephone that they may proceed. A letter documenting this action, which includes the map of the survey area, is sent to the dirt contractor and copied to the District and Construction Services or Local Government. When the inventory report is received and we have received State Historic Preservation Office concurrence, a cover letter, a copy of State Historic Preservation Office concurrence and the report are sent to the dirt contractor and a copy of State Historic Preservation Office concurrence is sent to Construction Services or Local Government.

If cultural resources are located within the bounds of the proposed area of disturbance the dirt contractor is encouraged to find another source.

An extensive data base file is maintained on borrow and aggregate pits. This information provides the Cultural Resource Section with a method of retrieving pertinent data so as to alleviate duplication of effort when locations are listed for more than one project.

Bridge Replacement: The existing bridge inventory was completed in 1992. A new bridge inventory has been completed and is available. The bridge inventory lists bridges surveyed during the inventory, their eligibility for inclusion on the National Register of Historic Places, and a context that can be used to evaluate bridges not included in the inventory. The Cultural Resource Section is currently working on a Bridge Management Plan which will simplify our process of addressing bridge issues.

There are a number of ways of resolving adverse effects when it is infeasible to rehabilitate the existing structure. Smaller truss bridges are documented and an attempt is made to adopt them out for other functions such as use on a golf course or a small private road or a pedestrian walkway. Larger bridges are documented before demolition. This involves photography using large format cameras with prints on special archival quality paper. The written narrative includes a biography of those involved in building the bridge, fabricating the structural members, and those manufacturing the steel. Further documentation of the bridge puts it into historical context. The documentation is reviewed by the State Historic Preservation Office and the National Park Service. The final product is printed on archival quality paper and ultimately goes on file at the Library of Congress in Washington, D.C.

Urban: Similar in procedure to those projects previously discussed but dissimilar in the usual type of cultural resource, urban projects have greater potential to affect standing historic structures. Where an urban project calls for street reconstruction, historic buildings and their setting can be adversely affected. A historic or prehistoric site can be adversely affected if its integrity is modified in a way which affects or changes the reason it was evaluated as eligible to the National Register of Historic Places. An urban reconstruction project requiring widening outside the existing curb (including sidewalk work) can adversely affect the properties' integrity. Avoidance, minimization, or mitigation of adverse effects can vary widely, but may include extensive recording of a single property or a historic district through photography and researching of the history of the property.

Fortunately, most towns and cities in North Dakota of 5,000 residents or more have had some cultural resource inventory conducted. Some have residential or commercial historic districts designated. Cultural resource inventory of these projects can vary from an extensive architectural survey to a Class III inventory which takes into account the potential for buried historic and prehistoric remains. The type of inventory needed varies dependent upon previous work in the area, known building dates and types, potential for significant buried archaeological remains, and project parameters.

Urban cultural resource inventories are frequently contracted out to private cultural resource firms. Reports of these inventories are handled similarly to those described for other types of projects above. In other cases, an assessment of minimal potential to affect Historic Properties is made by the Cultural Resource Section and no further cultural resource work is undertaken. This assessment may be documented through solicitation of views letters to the State Historic Preservation Office. It is generally agreed (between the NDDOT, FHWA, and the State Historic Preservation Office) that if there is no widening beyond the existing curbs or the project is through a newer area of town with low archaeological site potential, we can consider that there is no potential for the project to affect Historic Properties and no further Section 106 compliance activity is needed.

Transportation Enhancement Projects: These projects include new rest areas, bike paths, living snow fence projects, byways/backways interpretive efforts, and other sorts of interpretive efforts which include information relative to cultural resources or Native American issues. These projects are reviewed by the Cultural Resource Section and appropriate recommendations are given. The Cultural Resource Section has completed inventories, advised on contracted inventories, communicated with the State Historic Preservation Office, written determinations, reviewed and written interpretive display information, and consulted with Native American communities about interpretive efforts.

II-05.05.06 404 Permits

Section 404 of the Clean Water Act prohibits the discharge of dredged or fill material into waters of the United States, including wetlands, without a permit from the U.S. Army Corps of Engineers.

Under Section 404, wetlands are defined as those areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. If a wetland, or other waters of the U.S. will be affected, the agency, in consultation with the Corps of Engineers, must decide what type of 404 permit would apply, after first delineating the wetlands and determining the extent of the impacts to the wetlands. The agency must contact the U.S. Fish and Wildlife Service, Natural Resources Conservation Service, or the Army Corps of Engineers if there is any doubt whether wetlands exist in the project area.

If the Corps of Engineers responds to the solicitation of views letter by stating that no jurisdictional waters lie within the project area, no further action is necessary by NDDOT. If the Corps responds by stating there are jurisdictional waters within the project area, then further action is necessary by NDDOT. A copy of the Corps' response is to be forwarded to the Design Division – Engineering and Environmental Section by the applicable NDDOT personnel or technical support. All correspondence should include the Corps' project and permit numbers.

If the designer determines there are no impacts within Corps' jurisdictional waters then no 404 permit will be required for the project. A copy of the determination is to be forwarded by NDDOT designer or technical support to the Engineering and Environmental Section immediately upon completion.

On projects where the Corps has stated that here are jurisdictional waters within the project area, the Corps will return the wetland delineation with the jurisdictional waters delineated on the map. Using the Corps' jurisdictional determination, the designer will determine if any project impacts lie within jurisdictional waters. A 404 permit is required for both permanent and temporary project impacts. If there are impacts within the Corps' jurisdictional waters, then a 404 permit will need to be applied for on the project. All necessary data, information, and, if applicable, the permit application will then be forwarded by NDDOT designer or technical support to the Engineering and Environmental Section immediately for the necessary action to obtain the 404 permit.

- Nationwide permits.

  Certain projects impacting waters of the U.S. are eligible to be constructed under Nationwide permits (NWPs). Some of these that may be applicable to transportation related projects are described in 33 CFR 330 as follows:

- NWP 3: The repair rehabilitation, or replacement of any previously authorized, currently serviceable, structure or fill... Preconstruction notification (PCN) to the Corps is required

- NWP 14: Activities required for the construction, expansion, modification, or improvement of linear transportation crossings - impacts greater than 0.1 acre or any impacts to wetlands require PCN. Maximum impact of 0.5 acre per crossing

- NWP 18: Projects with minor discharges - 0.10 acre or 25 cubic yard limit - PCN required for all wetland disturbance and any discharge over 10 cubic yards

- NWP 23: Projects that are categorically excluded from further environmental studies - PCN required. Corps may solicit public comment and add conditions.

- NWP 26: This permit has been revoked.

- NWP 27: Construction of wetland mitigation sites - PCN may be required.

- NWP 33: Temporary construction, access, and dewatering - PCN is required

- NWP 41: Reshaping existing jurisdictional drainage ditches - PCN required if reshaping over 500 linear feet

- Individual 404 permits.

  If a project does not qualify for a nationwide permit, the agency must apply for an individual 404 permit using Engineering Form 4345 from the Army Corps of Engineers in Bismarck. The Corps can also use their discretionary authority and require an individual permit for a project, even if it would otherwise qualify for one of the NWPs. A local agency should send proof of Section 404 clearance to the NDDOT, along with all other information required, prior to the bid opening (see Section 7.1 of the Local Government Manual).

- Information required to process a 404 Permit.

  The Engineering and Environmental Section (EES) is responsible for submitting 404 permit applications for NDDOT-designed projects. The information listed below should be forwarded to EES. The information should reflect the final design of the project as much as possible. The Local Government Division handles city and county projects and the procedures found in the Local Government Manual should be followed for these projects.

- Project location map. The map should show the project number, the beginning and end of the project, and should be of sufficient size to be readable. In addition the location of the project by county, and township-range-section should be provided.

- Plan and profile sheets showing impacted areas (if available).

- Cross sections at impacted area(s) (if available).

- Typical section(s).

- Wetland delineation. For NDDOT-designed projects, project designers should contact the EES biologist to determine if wetland delineations have been completed on their projects. If the delineations have been completed, the delineated wetlands should be incorporated into the project plans.

- Wetland impacts. Impacts should be based on the final project design. The wetland impacts will be calculated by the designer with assistance from the EES section, if necessary. If a wetland delineation has not been completed, an estimate of wetland impacts should be included in the PCR. If future delineation shows a change in impacts, these changes will be incorporated into the final plans along with the 404 Permit application. Provide a list of individual impacts, normally in acres. The listed impacts should be keyed into either the plan and profile sheets or the location map.

- Design changes. Notify EES of any design changes affecting wetland impact quantities so that the 404 permit application can be revised to implement these changes.

- A copy of the approved PCR for the project. This will provide project details to be included in the 404 permit request.

- On projects with a significant amount of right of way acquisition, where an individual 404 permit may be required, provide a list of adjacent landowners.

- Information should be received in EES a minimum of sixty days before the Plans Complete date in order to include the permit in the project plans and specifications.

▪ Other

- Temporary stream crossings will normally require a 404 permit. These should be included as impacts when preparing a PCR.

- Except for deep water habitat, all wetland impacts must be mitigated, whether or not a 404 permit is required.

II-05.05.07 Flood Plain Development Permits

If a project is located in a regulated floodplain, a floodplain development permit must be received from the local floodplain coordinator before construction can take place. Contact the North Dakota State Water Commission to find out if the project is in a regulated flood plain. The Water Commission can also provide contact information for the local floodplain coordinator. If the Water Commission was sent a Solicitation of Views letter, they normally provide this information in their response. In some cases, the Federal Emergency Management Agency (FEMA) will possibly need to be contacted.

For NDDOT-designed projects, the EES is responsible for floodplain development permit applications, documentation and approval. The project designer should contact EES after determining that the project will be constructed in a regulated floodplain. Additional information may be required from the designer before EES can complete the permit application. If the project scope of work changes from that originally proposed in the PCR, the designer or PCR author should advise and discuss the proposed changes with EES.

Cities are normally responsible for regulating flood plains within their boundaries. When a city project involves a flood plain, the city documents compliance by sending proof of compliance to NDDOT, along with all other information required in the Local Government Manual, prior to the bid opening.

II-05.05.08 Sovereign Lands Permit

Definition

A Sovereign Lands Permit is needed when a portion of a transportation project lies partially or wholly below the ordinary high water mark of a navigable stream or water.

Sovereign Lands consist of islands and beds of navigable streams and waters areas where vegetation is restricted by the action of water or where vegetation consists primarily of wetland species. Navigable streams and waters include waters that were navigable at the time of statehood including the Missouri River, Yellowstone River, Red River north of Wahpeton to the Canadian border, James River, Upper Des Lacs Lake, and Devils Lake.

Permit Application

For DOT projects Engineering and Environmental Section (EES) is responsible for obtaining the Sovereign Land Permit.

The designer should determine if any work will take place on Sovereign Lands, and whether a Sovereign Lands Permit is needed. The need for a Sovereign Land Permit is often stated in the solicitation of views (SOV) response letter from the North Dakota State Water Commission. If the statement is included in the SOV letter the designer should confirm that the activity is programmed in Milestone then contact the EES with the above mentioned information during the initial phase of the design process. The EES will then prepare the permit application.

Information Required

Upon confirmation of sovereign lands within a project a detailed set of plans should be given to the EES to be included in the permit application including the project location map and plan sheets.

II-05.05.09 Coast Guard Permit

Definition

A Coast Guard Permit is needed when any bridge, dam, dike, or causeway over or in any port, roadstead, haven, harbor, canal, navigable river, or other navigable water of the United States. Navigable streams and waters include waters that were navigable at the time of statehood including the Missouri River, Yellowstone River, Red River north of Wahpeton to the Canadian border, James River, Upper Des Lacs Lake, and Devils Lake.

Permit Application

For DOT projects Engineering and Environmental Section (EES) is responsible for obtaining the Coast Guard Permit.

The designer should determine if any work will take place in navigable streams or waters of the United States. The need for a Coast Guard Permit is often stated in the solicitation of views (SOV) response letter from the U.S. Army Corps of Engineers. If the statement is included in the SOV letter the designer should confirm that the activity is programmed in Milestone then contact the EES with the above mentioned information during the initial phase of the design process. The EES will then prepare the permit application.

Information Required

Upon confirmation for the need of a Coast Guard Permit, project details should be given to EES to be included in the permit application including the project location map and plan sheets.